

## **REMARKS**

The only issues outstanding in the Office Action of July 29, 2009, are the rejections under 35 U.S.C. 103 over newly applied references. Reconsideration of these issues, in view of the following discussion, is respectfully requested. It is noted that the various objections to claims 1 and 2 have been remedied.

### **Rejections Under 35 U.S.C. 103**

Claims 1-3, 5, 7-10, 19 and 20 have been rejected under 35 U.S.C. 103 over Ono (JP '821) taken with Munshi '863. Reconsideration is respectfully requested.

As noted at page 2 of the Office Action, Ono discloses a polymer electrolyte comprising a polyvinyl sulfonamide monomer, an imidazolium cation and a lithium salt, but fails to disclose the use of a polymer reinforcing material such as PVF. In order to remedy this deficiency, the Office Action cites Munshi, disclosing a *solid* electrolyte comprising a base polymer which could be polyvinylidene fluoride, supporting the electrolyte, and an ionically conductive polymer. The Office Action argues that it would be obvious to combine the polymer electrolyte of Ono, with the solid electrolyte polymer of Munshi. Applicants respectfully disagree with this analysis. Although it is argued, at page 3 of the Office Action, that the teachings of a secondary reference directed to capacitors would be applicable to batteries because of "the concern for ionic conductivity". It is respectfully submitted that the demands upon the materials where a liquid electrolyte is used, verses those upon a solid electrolyte, militate the use of highly different compositions having highly different properties. Thus, the fact that a polymer gives mechanical strength to a solid composition would not be seen by one of ordinary skill in the art to imply its utility, much less any beneficial effect, from its use in an ionic *liquid*.

Moreover, attention is directed to the attached declaration under 37 C.F.R. 1.132, which shows a surprising addition in conductivity, in an addition to tensile strength, for electrolyte films in accordance with the invention verses those lacking the polymer reinforcing material, i.e., equivalent to Ono. Comparative experiment 1 in the declaration is a material prepared in accordance with example 3 of the present application, except in which the polymer reinforcing

material is omitted. Not only is the tensile strength of the example in accordance with the invention more than double that of the comparative example, the conductivity is three orders of magnitude greater. While it is presumed that the Examiner would argue that an increase in tensile strength is expected in view of the teachings of Munshi, which arguably teaches increased mechanical strength in (dissimilar) materials, one of ordinary skill in the art would hardly expect to find such a substantial increase in conductivity from the use of a strengthening polymer.

The disparity between the solid electrolyte of the secondary reference and the ionic liquid of the primary reference is further evident from comparative examples 2 and 3 in the present declaration. Comparative examples 2 and 3 reproduce the example of Ono, but without ionic liquid formulation (i.e., by omitting the quaternary ammonium cation and fluorine-containing anion of the ionic liquid in comparative experiment 2) and the material of Munshi, in comparative example 3. Table A of the declaration shows that the material in accordance with the invention (example 7) has far greater discharge capacity in an initial cycle, and substantially greater discharge capacity after twenty cycles, verses either of these comparative materials. It is thus clear that an ionic liquid is not comparable to a solid electrolyte, and further evident that one of ordinary skill in the art would not employ any teachings from the solid electrolyte in the ionic liquid.

It is accordingly respectfully submitted that ample basis exists to withdraw the rejections under 35 U.S.C. 103, and the same is respectfully requested.

Claims 12, 13, 21 and 22 have also been rejected under 35 U.S.C. 103 over Ono and Munshi taken with Gan. Gan is cited to provide a teaching of various salts for use in an ionic liquid. However, this reference does nothing to remedy the above-discussed deficiencies of Ono and Munshi, and accordingly this rejection should also be withdrawn.

The claims of the application are submitted to be in condition for allowance. However, should the Examiner have any questions or comments, he is cordially invited to telephone the undersigned at the number below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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